

CLAIMS

What is claimed is:

1. A catheter guiding assembly, comprising:

a catheter, comprising:

an elongate shaft having an exterior surface, a proximal end, and a distal end,

a first lumen extending through the shaft from the shaft proximal end to the shaft distal end, and sized to receive a guidewire, and

a guideway extending from the shaft proximal end to the shaft distal end, and enabling transverse access from the shaft exterior surface to the first lumen; and

a catheter advancing and retracting apparatus, comprising:

an elongate housing having a proximal end and a distal end,

an opening formed through the housing from the housing proximal end to the housing distal end and adapted to receive the catheter,

a wheel port formed in the housing between the housing proximal and distal ends and in communication with the opening, and

a wheel secured in the wheel port and sized to radially extend into the catheter guideway when the catheter is received in the opening.

2. The catheter guiding assembly according to claim 1, wherein the catheter further comprises a second lumen extending through the shaft from the shaft proximal end to the shaft distal end, and having a nearly annular cross sectional area that almost entirely surrounds the first lumen.

3. The catheter guiding assembly according to claim 2, wherein the first lumen and the second lumen are both formed from a single wall having a substantially uniform thickness.

4. The catheter guiding assembly according to claim 3, wherein the single wall includes two approximately parallel segments that together define the catheter guideway.

5. The catheter guiding assembly according to claim 4, wherein the two parallel segments are adapted to be flexibly spaced apart when receiving the wheel.

6. The catheter guiding assembly according to claim 1, wherein the wheel port includes slots, and the wheel includes an axle that is rotatably secured in the slots.

7. The catheter guiding assembly according to claim 1, wherein the wheel includes an axle, a large diameter portion and two small diameter portions flanking the large diameter portion.

8. The catheter guiding assembly according to claim 7, wherein the large diameter portion has a circumferential concave surface.

9. The catheter guiding assembly according to claim 7, wherein each of the small diameter portions has a circumferential concave surface.

10. The catheter guiding assembly according to claim 7, wherein the large diameter portion is approximately centered between the small diameter portions.

11. The apparatus according to claim 1, wherein the wheel port is formed proximate to the housing distal end.

12. The apparatus according to claim 1, further comprising:

a guidewire removal tool, comprising a substantially cylindrical main body sized to be receivable by the first lumen and having a chamfered leading edge adapted to raise the guidewire out of the first lumen through the guideway.

13. An apparatus for advancing and retracting a catheter and guidewire in a patient, the apparatus comprising:

an elongate housing having a proximal end and a distal end;

a opening formed through the housing from the proximal end to the distal end and adapted to house the catheter and guidewire;

a wheel port formed in the housing between the proximal and distal ends and in communication with the opening; and

a wheel secured in the wheel port and radially extending into the opening to engage with the catheter.

14. The apparatus according to claim 13, wherein the wheel port includes slots, and the wheel includes an axle that is rotatably secured in the slots.

15. The apparatus according to claim 13, wherein the wheel includes an axle, a large diameter portion and two small diameter portions flanking the large diameter portion.

16. The apparatus according to claim 14, wherein the large diameter portion has a circumferential concave surface.

17. The apparatus according to claim 15, wherein each of the small diameter portions has a circumferential concave surface.

18. The apparatus according to claim 15, wherein the large diameter portion is approximately centered between the small diameter portions.

19. The apparatus according to claim 13, wherein the wheel port is formed proximate to the housing distal end.

20. A catheter, comprising:

an elongate shaft having an exterior surface, a proximal end, and a distal end;

a first lumen extending through the shaft from the shaft proximal end to the shaft distal end, and sized to receive a guidewire; and

a guideway extending from the shaft proximal end to the shaft distal end, and enabling transverse access from the shaft exterior surface to the first lumen.

21. The catheter according to claim 20, wherein the catheter further comprises a second lumen extending through the shaft from the shaft proximal end to

the shaft distal end, and having a nearly annular cross sectional area that almost entirely surrounds the first lumen.

22. The catheter according to claim 21, wherein the first lumen and the second lumen are both formed from a single wall having a substantially uniform thickness.

23. The catheter according to claim 22, wherein the single wall includes two approximately parallel segments that together define the catheter guideway.

24. The catheter according to claim 23, wherein the two parallel segments are adapted to be flexibly spaced apart when receiving the wheel.